

AMENDMENTS TO THE SPECIFICATION

Please amend the specification at page 1, by inserting after the title:

--CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a continuation of U.S. Serial No. 10/298,867, filed November 18, 2002, now U.S. Patent No. 6,602,807, which is a continuation of 09/921,539, filed August 3, 2001, now U.S. Patent No. 6,503,851, which is a continuation of 09/652,188, filed August 31, 2000, now U.S. Patent No. 6,368,986.--

Please amend page 10 of the Specification, after the title "Brief Description of the Drawings" paragraphs 3 and 4 with the following:

FIG. 2 shows the substrate of FIG. 21 following selective depositing of silicon oxide.

FIG. 3 shows the substrate of FIG. 32 following an etch processing step.

Please amend page 12 of the Specification, paragraph 1, and beginning on line 5 with the following:

The substrate 20 (single crystal) and protrusions 21 and 22 are contacted with gaseous ozone and gaseous TEOS under conditions where a silicon oxide layer 30 is deposited over the substrate and protrusions as shown in FIG. 2. At the proper reaction conditions, the silicon oxide will deposit selectively onto the substrate and protrusions in a single process step. The selectivity of this single process step avoids the necessity of masking and performing multiple photolithographic steps to form a suitably thick oxide layer or spacer 30 over the component layers of the protrusions 21, 22 and the substrate 20. As shown a thicker layer 26 is formed over the P-type layer 23. An intermediate thickness layer 27 is deposited over non-doped silicon substrate 20. A thinner layer 24 is deposited over the N-type silicon layer 2428. An intermediate thickness layer 29 is deposited over metalized silicide film layer 25.

Please amend page 15, line 9 through page 16, line 18 of the Specification with the following:

A linear injection system usable for this invention is shown schematically in Fig. 4. The injector 214 generally includes a central injection port 220, two outer injection ports 222, and separation ports 224 positioned between the central ports 220 and each of the outer ports 222 and exhaust ports 218. In accordance with this invention, the central injection port 220 is coupled to an ozone source 226, the outer ports 222 are coupled to a chemical reagent source 228, and the separation ports 224 are coupled to a source 230 of an inert gas such as nitrogen to prevent premature mixing of the reagent and ozone which could lead to powder formation. The chemical reagent is tetraethoxysilane (TEOS). In the illustrated embodiment, the TEOS vapor is delivered to the outer ports 222 from a bubbler at ~~65-degree~~ 65° C. by nitrogen carrier gas. However, other means may be used to deliver the chemical reagent to the outer ports 222 as is known in the art.

Ozone may be injected through the central port 220 at a flow rate of about 2 to 10 standard liter per minute (slm). The ozone is preferably supplied in a mixture of ozone and oxygen having an ozone concentration of about 70 to 150 ~~g/m-sup.3g/m~~³ ozone. The chemical reagent or TEOS can be supplied at a flow rate of 10 to 50 standard cubic centimeters per minute (sccm), and injected through the outer ports with a ~~n~~Nitrogen carrier gas at a flow rate of about 0.5 to 8 slm. The ratio of ozone to TEOS introduced into the chamber is in the range of 10:1 to 30:1. The injected gases mix and react to deposit a film on the surface of the wafer 26.

Examples of the enhanced selectivity obtained by the current invention are shown in FIG. 5 for substrates of silicon and SiN. FIG. 5 shows the selectivity, standard deviation and deposition rate for various pulsing options and film thickness. Selectivity is the preferred deposition on silicon versus SiN and is defined as:

$$\text{Selectivity} = (T_{\text{Si}}/T_{\text{SiN}} - 1) \times 100\%,$$

where T_{Si} is the oxide film thickness deposited onto a silicon substrate and T_{SiN} is the oxide film thickness deposited onto a SiN substrate.

The examples shown in FIG. 5 were produced using a showerhead design injector to deliver 350 milligrams per minute TEOS and about five liters per minute of oxygen containing about 10% by weight ozone. Pulsing was done at 1 second intervals for pulsed TEOS delivery and pulsed ozone delivery. Pulsing was done at 2 second intervals for alternating TEOS and

ozone delivery. The reaction temperature was about 400°C. The reaction pressure was about 500 torr. The reaction times were varied as necessary to obtain the desired thickness of the deposited layer, but were generally about 10-30 seconds. The spacing between the showerhead and the substrate was 150 milmm for the standard no-pulse, Examples (Ex.) A and C, and Comparative Sample (C.S.) 1. The spacing between the showerhead and the substrate was 200 milmm for Example B and C.S. 2.

AMENDMENTS TO THE DRAWINGS

Please replace FIGS. 1-5 with new FIGS. 1-5.